CLAIMS

1. A method for creating a network configuration for high degree of separation demands comprising:

specifying demands, nodes, spans, speed hierarchy, equipment, weights, preferences and constraints;

selecting a Fundamental Unit;

identifying a plurality of high degree of separation demands;

performing calculations based upon the constraints, speed hierarchies, preferences and fundamental unit to select a cycle, place equipment and route demands

2. The method of claim 1 further comprising defining degree of separation.

3. The method of claim 1 further comprising routing high degree of separation demands.

4. The method of claim 1 further comprising;

selecting a demand and finding all cycles that have a span or node in common with the a demand path of the demand;

creating a list of all demands with a source and a destination that are on the cycles;

ranking each of the cycles based on the number of sources and destinations that are located on the cycle, the number of spans an original demand touches, and how close the cycle comes to a preferred cycle size.

5. The method of claim 1 further comprising transforming a plurality of cycles into a network where the cycles become nodes and the connections between cycles become spans.

6. The method of claim 1 further comprising routing demands across a network using a shortest path algorithm where a plurality of rankings are a plurality of weights on a plurality of spans.

7. The method of claim 1 further comprising determining whether there is a cycle with one or more demands touching it, and responsive to a determination that there is a cycle with one or more demands touching it, creating a list of demand segments.

8. The method of claim 1 further comprising the step of equipment selection.

9. The method of claim 1 further comprising the step of placing equipment.

10. The method of claim 1 further comprising selecting a CNE.

11. The method of claim 1 further comprising selecting demands that are compatible with a selected CNE.

12. The method of claim 1 further comprising routing demands on a cycle.

13. The method of claim 1 further comprising updating a demand list to delete a routed demand.

14. The method of claim 1 further comprising placing a CNE.

15. A method for creating a network configuration for high degree of separation demands comprising:

specifying demands, nodes, spans, speed hierarchy, equipment, weights, preferences and constraints;

selecting a Fundamental Unit;

identifying low degree of separation demands;

performing calculations based upon the constraints, speed hierarchies, preferences and Fundamental Unit to select a CNE.

16. The method of claim 15 further comprising, responsive to a determination that there are a plurality of CNEs with a same cost and a same percent of carried demands, choosing BLSRx over UPSR and choosing a CNE with a highest capacity.

17. A method for creating a network configuration for high degree of separation demands comprising:

specifying demands, nodes, spans, speed hierarchy, equipment, weights, preferences and constraints;

selecting a Fundamental Unit;

identifying a plurality of high degree of separation demands;

performing calculations based upon the constraints, speed hierarchies, preferences and fundamental unit to route demands.

18. The method of claim 17 further comprising inputing unrouted demands and a cycle wherein each demand has a speed and a computed shortest path.

19. The method of claim 17 further comprising creating a definition of an RP.

20. The method of claim 17 further comprising calculating an RP for each demand.

21. The method of claim 17 further comprising sorting demands by RP.

22. The method of claim 17 further comprising routing demands in order of an RP value.

23. The method of claim 17 further comprising the step of determining ring utilization by calculating a ring fill metric (RFM) using the formula RFM = ((Number of Demands on the Cycle) * (total Flow)/ (Number of Unused Spans) if the Number of Unused Spans is greater than 0, and using the formula RFM = (Number of Demands on the Cycle) * (Total Flow) if the number of unused spans is 0.

24. The method of claim 17 further comprising calculating an RP for each demand using the formula RP = speed.

25. The method of claim 17 further comprising calculating an RP for each demand using the formula RP = 1/speed.

26. The method of claim 17 further comprising calculating an RP for each demand using the formula RP = length.

27. The method of claim 17 further comprising calculating an RP for each demand using the formula RP = 1/length.

28. The method of claim 17 further comprising calculating an RP for each demand using the formula RP = x * speed + y * length where $x + y = 1$ and $0 \leq x, y \leq 1$.

29. The method of claim 17 further comprising calculating an RP for each demand using the formula RP = x * speed + y/length where $x + y = 1$ and $0 \leq x, y \leq 1$.

30. The method of claim 17 further comprising calculating an RP for each demand using the formula RP = x/speed + y * length where $x + y = 1$ and $0 \leq x, y \leq 1$.

31. The method of claim 17 further comprising calculating an RP for each demand using the formula RP = x/speed + y/length where $x + y = 1$ and $0 \leq x, y \leq 1$.

32. A programmable apparatus for creating a network configuration comprising:

a computer having a memory; and

a software program installed in said memory;

wherein the computer is directed by said software program to receive input comprising;

constraints, preferences, a speed hierarchy, and selection of a Fundamental Unit;

and responsive to receiving said input, the computer is directed to:

identify demands that are high degree of separation demands.

33. The programmable apparatus of claim 32 wherein the speed hierarchy comprises:

a list of tuples;

wherein one of said tuples is the Fundamental Unit.

34. The programmable apparatus of claim 32 wherein the speed hierarchy contains a Multiple Unit; and wherein said Multiple Unit is a permissible communications rate in a communications network;

wherein said Multiple Unit is described as a tuple having both an alphanumeric label and a multiple value; and

wherein the multiple value may be any positive value greater than one.

35. The programmable apparatus of claim 32 wherein said list comprises a Multiple Unit with a multiple value of the Fundamental Unit.

36. The programmable apparatus of claim 32 wherein the Fundamental Unit is the lowest permissible communications rate permissible in the communications network, and wherein the Fundamental Unit is described as a tuple having an alphanumeric label and a multiple value of one.

37. The programmable apparatus of claim 32 wherein the speed hierarchy is a T-Carrier.

38. The programmable apparatus of claim 32 wherein the speed hierarchy is an E-Carrier.

39. The programmable apparatus of claim 32 wherein the speed hierarchy is an SDH.

40. The programmable apparatus of claim 32 wherein the speed hierarchy is a SONET.

41. The programmable apparatus of claim 32 wherein the speed hierarchy is an Ethernet.

42. The programmable apparatus of claim 32 wherein the speed hierarchy is a DS-n.

43. The programmable apparatus of claim 32 wherein the speed hierarchy is an E-n.

44. The programmable apparatus of claim 32 wherein the speed hierarchy is an Optical Carrier (OC-n).

45. The programmable apparatus of claim 32 wherein the speed hierarchy is a Synchronous Transport Module (STM-n).

46. The programmable apparatus of claim 32 wherein the speed hierarchy is a Synchronous Transport Signal (STS-n).